

Remarks/Arguments

Claims 19-38 are pending, and are rejected.

Claim 21 is cancelled.

Claim Rejection - 35 U.S.C. § 112

Responsive to the rejection, applicant has cancelled claim 21 without prejudice and disclaimer.

Claim Rejection - 35 U.S.C. § 103(a)

a) Harrington in view of Tigwell, Eisaku, and Smith

Responsive to the rejections of claims 19, 23-28, and 33-37 as being unpatentable over U.S. Patent 4,897,883 ("Harrington") in view of U.S. Patent 5,227,780 ("Tigwell"), JP Patent Publication P2001-8278A ("Eisaku"), and U.S. Patent 4,856,081 ("Smith"), applicant respectfully submits that these claims are patentable over these four references, as discussed below.

Independent claim 19, for example, recites a control device for extending an effective control range of a first control device for controlling an IR controllable device. The control device includes a receiver for receiving from the first control device a first control signal having a first data segment for control information; means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency. This RF signal is adapted to be received by a second control device that converts the RF signal into an IR control signal for controlling the IR controllable device, and the IR control signal has an IR carrier with the IR carrier frequency and a data segment for the control information.

As pointed out in the Office Action, Harrington does not teach the feature of extracting an IR carrier frequency from an incoming control signal and transmitting a RF signal having a data segment for both the extracted IR carrier frequency and the control information extracted from the incoming control signal, as recited in claim 19. The Office Action, however, relies upon the teaching of Tigwell that it is not desirable to directly convert the signal from IR to RF and some encoding method is needed to comply with FCC rules, the teaching of Eisaku of a message format shown in FIG. 9 for transmitting carrier information and control code to a remote control device, and the teaching of Smith of a method for determining carrier frequency, and concludes that a skilled artisan can arrive at the claimed invention by modifying the system disclosed in Harrington with the combined teachings of Tigwell, Eisaku, and Smith.

First of all, the reason, as stated in Tigwell at col. 1, lines 47-55, that the converted RF signal exceeds the FCC rules is that amplitude modulation (AM) is used. As pointed out at page 4, lines 22-25 of the present application, if frequency modulation (FM) is used, the RF signal will not exceed the FCC rules. The reason that using FM will not exceed the FCC rules is that there are a lot of frequencies to use in the FCC allowed band of 295-365 MHz. See page 3, lines 30-32 of the present application. The IR repeater disclosed in Harrington uses FM. See col. 3, lines 54-46 of Harrington. Therefore, the bandwidth of the converted RF signal can meet the FCC rules. Since the stated problem does not exist in the IR repeater disclosed in Harrington, a skilled artisan would not modify the IR repeater in Harrington to use AM as taught in Tigwell.

Second, rather than solving the problem using FM, Tigwell solves the same problem in a different way -- reducing the bandwidth needed for the RF signal by storing in the transponder the IR code, which can be identified by the narrow-band RF data

signal. See col. 1, lines 56-63. Since each solves the same problem in a different way, there is no need to modify the IR repeater disclosed in Harrington to use AM as taught in Tigwell.

In fact, Harrington's solution is much simpler -- it does not require a microprocessor and associated software/firmware in the receiver and the transmitter. See FIGs. 3 and 4 of Harrington. Modifying the IR repeater disclosed in Harrington to use AM and the encoding scheme disclosed in Tigwell would need a microprocessor and associated software/firmware, which would certainly increase the cost and complexity of the IR repeater. Thus, there is no motivation to modify the system disclosed in Harrington to incorporate the teaching of Tigwell.

Lastly, since there is no motivation to modify the system disclosed in Harrington to use AM as taught by Tigwell, there is no need to modify the system disclosed in Harrington (by adding a microprocessor and associated software/firmware) to determine the IR carrier frequency as taught by Smith and the message format as taught by Eisaku.

In fact, since there is no motivation to modify the system disclosed in Harrington as suggested in the Office Action, the conclusion of obviousness is based on improper hindsight reasoning by including knowledge gleaned only from applicant's disclosure.

In light of the fact that Harrington does not teach the feature of extracting an IR carrier frequency from an incoming control signal and transmitting a RF signal having a data segment for both the extracted IR carrier frequency and the control information extracted from the incoming control signal, as recited in claim 19, and there is no motivation to modify the system disclosed in Harrington with the combined teaching of Tigwell, Eisaku, and Smith in the manner suggested in the Office Action, applicant

submits that claim 19, and dependent claims 20, and 22-32, are patentable over these four references.

Applicant submits that the arguments made above with respect to claim 19 is also applicable to independent claims 33, 35 and 37, and submits that claims 33, 35, and 37, and respective dependent claims 34, 36, and 38 are patentable over the four references.

b) Thomas in view of Tigwell, Eisaku, and Smith

Responsive to the rejections of claims 19-22, 33-35, and 37-38 as being unpatentable over U.S. Patent 6,400,480 ("Thomas"), in view of Tigwell, Eisaku, and Smith, applicant respectfully submits that these claims are patentable over these four references, as discussed below.

Like Harrington, Thomas teaches the use of FM, if modulation is used, in the RF signal generated by the battery module transceiver (IR repeater) 5. See col. 3, lines 26-30. Thus, there is no motivation to modify the repeater disclosed in Thomas to use AM as taught in Tigwell, as discussed above in Section a). In fact, since the three secondary references are the same, applicant submits that the arguments made above in Section a) are also applicable to this rejection and submits that claims 19, 20, 22, 33-35, 37 and 38 are patentable over Thomas, Tigwell, Eisaku, and Smith.

c) Harrington in view of Tigwell, Eisaku, and Smith, further in view of Anderson

Responsive to the rejections of claims 29-32 as being unpatentable over Harrington in view of Tigwell, Eisaku, and Smith as applied to claims 19, 23-28, and 33-37, and further in view of U.S. 6,130,910 ("Anderson"), applicant respectfully submits that these claims are patentable over these five references for their direct and indirect dependence from independent claim 19.

Anderson does not cure the defect of Harrington, Tigwell, Eisaku, and Smith as applied to independent claim 19. Anderson discloses an apparatus for high efficiency wideband power amplification. It is not concerned with the problem of extending an effective range of a remote control for controlling an IR controllable device. As such, Anderson does not disclose or suggest a control device having "means for extracting an IR carrier frequency from the first control signal and for means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency," as recited in claim 19.

d) Thomas in view of Tigwell, Eisaku, and Smith, further in view of Anderson

Responsive to the rejections of claims 29-32 as being unpatentable over Thomas in view of Tigwell, Eisaku, and Smith as applied to claims 19-22, 33-35, and 37-38, and further in view of Anderson, applicant respectfully submits that these claims are patentable over these five references for their direct and indirect dependence from independent claim 19.

As discussed in Section b), Thomas and Harrington teach the same as applied to claim 19 -- using the FM, and, as discussed in Section c), Anderson fails to cure the defect of Thomas, Tigwell, Eisaku, and Smith as applied to claim 19. Thus, claim 19, and dependent claim 29-32, are patentable over the five references.

Conclusion

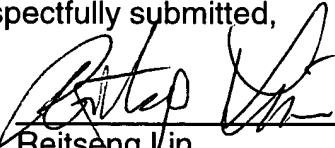
Having fully addressed the Examiner's objections and rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken,

the Examiner is invited to contact the applicant's attorney at (609) 734-6813, so that a mutually convenient date and time for a telephonic interview may be scheduled.

Fee

No fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 07-0832.

Respectfully submitted,

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